

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

In the specification, paragraphs 0006 and 0007 have been amended.

Claims 4, 7, and 14-16 have been cancelled.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-3, 5, 6, 8-13, and 17-20 are now pending in this application. Claims 9, 10, 12, 13, and 17 have been withdrawn.

Rejections under 35 U.S.C. § 103(a)

Claims 1-4, 18, and 20 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,615,933 to Kidston *et al.* (hereafter “Kidston”) in view of U.S. Patent No. 6,607,253 to Yamamoto *et al.* (hereafter “Yamamoto”). This rejection is respectfully traversed.

Kidston discloses an electric vehicle with regenerative and anti-lock braking with a hydraulic brake system 17 including actuators 114 and 116, solenoid valves 102 and 104, and a brake control 66 that controls the system 17 and monitors rotational speeds of vehicle wheels via speed sensors 28, 30, 52, and 54. See Kidston at col. 2, lines 41-53.

However, as indicated on page 2 of the Office Action, Kidston does not disclose or suggest a brake reaction torque detector, as recited in claim 1. Claims 2, 3, 18, and 20 depend from claim 1.

In addition, Kidston does not disclose or suggest a brake device comprising, among other things, a wheel-cylinder pressure modulator valve that is fluidically connected with a wheel-cylinder pressure passage and an on-demand brake pressure passage, the wheel-

cylinder pressure modulator valve being capable of modulating the wheel-cylinder pressure so that the fluid pressure brake torque can be decreased based on the brake reaction torque and the on-demand brake torque, wherein the wheel-cylinder pressure modulator valve has a mechanical feedback mechanism for modulating the wheel cylinder fluid pressure so that a sum torque of the brake reaction torque applied through a working arm in an opening direction and the fluid pressure brake torque due to the wheel cylinder fluid pressure in the opening direction can be balanced with on-demand brake torque due to an on-demand brake fluid pressure generated in the on-demand brake pressure passage, as recited in claim 1.

Instead, Kidston discloses the solenoid valves 102 and 104 to modulate a master cylinder pressure but this is based on the slip rates of wheels, not a brake reaction torque or an on-demand brake torque, as recited in claim 1. Nor is the device of Kidston configured to modulate wheel-cylinder pressure so that fluid pressure brake torque can be decreased on the basis of these torques, as recited in claim 1. Nor does the device of Kidston modulate wheel cylinder fluid pressure so that a sum torque of a brake reaction torque applied through a working arm in an opening direction and the fluid pressure brake torque due to the wheel cylinder fluid pressure in the opening direction can be balanced with on-demand brake torque due to an on-demand brake fluid pressure generated in the on-demand brake pressure passage, as recited in claim 1.

Yamamoto discloses a braking torque control apparatus which includes a controller 50 connected to an operating force sensor 302, a brake pedal switch 304, a vehicle speed sensor 306, four wheel speed sensors 308, a motor current sensor 310, and strain sensors 312, 314. See Yamamoto at col. 9, lines 65-67, and col. 11, lines 63-67. A computer 300 of the controller 50 controls electric motors 20 in electric disc brakes 22 provided in electric drum brakes 32 to control an applied braking force to become equal to a target braking force. See Yamamoto at col. 10, lines 22-25, and col. 11, line 60, to col. 12, line 30.

Yamamoto does not disclose or suggest a brake device, wherein an orifice is provided in a first communicating fluid pressure passage between an on-demand brake fluid pressure chamber and a wheel-cylinder fluid pressure chamber, wherein a wheel-cylinder pressure modulator valve is provided in a second communicating fluid pressure passage between the

wheel-cylinder fluid pressure chamber and a return fluid pressure chamber, and wherein the wheel-cylinder pressure modulator valve has a mechanical feedback mechanism for modulating the wheel cylinder fluid pressure so that a sum torque of the brake reaction torque applied through a working arm in an opening direction and the fluid pressure brake torque due to the wheel cylinder fluid pressure in the opening direction can be balanced with on-demand brake torque due to an on-demand brake fluid pressure generated in the on-demand brake pressure passage, as recited in amended claim 1.

In other words, due to the features recited in claim 1, including the working arm and the mechanical feedback mechanism, the brake device of claim 1 mechanically detects a brake reaction torque and mechanically applies it to a valve of a wheel-cylinder pressure modulator valve.

In contrast, Yamamoto uses strain sensors which electronically detect a brake reaction torque and electric motors to apply a desired brake torque. Nor does Yamamoto disclose or suggest the features of claim 1, including a working arm and mechanical feedback mechanism, as recited in claim 1. Thus, Yamamoto does not remedy the deficiencies of Kidston.

Applicant's invention advantageously enables a brake device to obtain a reaction brake torque and to modulate a wheel-cylinder fluid pressure to suppress a variation in a brake force applied to a wheel, regardless of a variation in friction coefficient.

For at least these reasons, the combination of Kidston and Yamamoto does not disclose or suggest all of the features of claim 1. Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 5-7, 11, and 19 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kidston and Yamamoto in view of U.S. Patent No. 6,113,119 to Laurent *et al.* (hereafter “Laurent”). This rejection is respectfully traversed. Laurent fails to remedy the deficiencies of Kidston and Yamamoto discussed above in regard to independent claim 1, from which claims 5, 6, 11, and 19 depend. Reconsideration and withdrawal of this rejection is respectfully requested.

Allowable Subject Matter

Applicant gratefully acknowledges the indication that claim 8 includes allowable subject matter.

Conclusion

Applicant submits that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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